

### REMARKS/ARGUMENTS

Favorable reconsideration of this application as currently amended and in view of the following remarks is respectfully requested.

Claims 1-3 and 5-20 are currently active in this case. Claims 1, 3, 6, 8, 10-12, and 14-16 have been amended and claims 4, 21-23, and 26-30 have been cancelled by the current amendment. No new matter has been added. See Figures 3, 4A, and 4B of the Specification.

In the outstanding Office Action, claims 1-15 and 26-28 were objected to; claims 1-23, 29, and 30 were rejected under 35 USC 103(a) as being unpatentable over US Patent Publication No. 2003/0069491 to Kruger in view of US Patent No. 5,977,538 to Unger et al.; claims 26 and 28 were rejected under 35 USC 103(a) as being unpatentable over Kruger in view of Unger et al. and US Patent No. 6,049,728 to Chou; and claim 27 was rejected under 35 USC 103(a) as being unpatentable over Kruger in view of Unger, Chou, and US Patent Publication No. 2003/0097049 to Diab et al.

In response to the objection to claim 1 as not maintaining the same verb tense throughout the claim, Applicants have amended claim 1 to clarify that the electroacoustic transducer elements are configured to convert acoustic waves. No further objection to claim 1 is anticipated.

Regarding the objection to claim 1 because the term “reception directivity” is unclear, Applicants respectfully submit that the term “reception directivity” has an antecedent basis in the Specification. The Specification discloses on page 21, lines 5-10 that a transmission/reception unit 22 selectively drives the electroacoustic unit 23, and generates a reception signal having reception directivity by “delaying transmission/reception signals by predetermined time and performing phased addition.” Thus, Applicants respectfully submit that the term “reception directivity” is clear. If further clarity is required, Applicants

respectfully request that the Examiner contact the undersigned so that this issue can be discussed.

Claims 26-28 have been cancelled. Consequently, the objection to those claims is moot.

The present invention (claim 1) is directed to a non-invasive imaging apparatus including a light irradiation unit configured to irradiate light generated by a light generating unit into a subject to be examined; a waveguide including a plurality of optical fibers, and configured to guide the light generated by the light generating unit to the irradiation unit; and electroacoustic transducer elements including a plurality of two-dimensionally arrayed conversion elements configured to convert acoustic waves from the subject into electrical signals. The plurality of optical fibers are two-dimensionally laid in gaps between said plurality of conversion elements such that each optical fiber is surrounded by four adjacent conversion elements.

As a consequence of this configuration, the amount of air expelled between the transducer elements and the subject can be increased relative to the configurations of the prior art. Col. 10, lines 2-9 of the Specification.

The Official Action acknowledges on page 5 that Kruger fails to show “the plurality of optical fibers arranged in the intervals between horizontally and vertically arrayed transducer elements.” Applicants agree. Applicants respectfully submit that Kruger also fail to teach a plurality of optical fibers two dimensionally laid in gaps between a plurality of conversion elements such that each optical fiber is surrounded by four adjacent elements. The Official Action asserts that Kruger discloses “a waveguide (84) discretely arranged between arrayed transducer elements in a handheld unit (86-1 through 86-8; see also Figure 7), surrounded by eight elements.” However, the waveguide 84 is not provided in two dimensions (i.e., in an X and Y direction). Further, even if the configuration of the

waveguide 84 and transducer elements were repeated, the resulting configuration would not result in each waveguide being surrounded by four adjacent transducer elements.

Further, the Unger et al. patent illustrates in FIGS. 3C and 3D an opto-acoustic transducer having ultra-sonic elements and respective optical elements configured in a linear array. See column 5, lines 30-36 of Unger et al. That is, the ultra-sonic elements 114 and fibers 100 are alternately provided. In contrast, the present invention (claim 1) requires each optical fiber to be surrounded by four adjacent conversion elements. Thus, Unger et al. do not remedy the deficiency of Kruger.

In view of the foregoing, Kruger is not believed to anticipate or render obvious the subject matter defined by claim 1 when considered alone or in combination with Unger et al. The remaining secondary applied references are not believed to cure the deficiencies of Kruger et al. and Unger et al.

Claim 16 is directed to a non-invasive subject imaging method and similar to claim 1 defines that each optical fiber is surrounded by four adjacent conversion elements. Thus, claim 16 is also believed to be allowable. The active dependent claims are believed to be allowable for at least the same reasons the respected independent claims are believed to be allowable.

In view of the foregoing no further issues are believed to remain. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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